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ABSTRACT

Data from a previous study concerning the relation between sex-role identity and sex-role attitudes and achievement motivation in females were reanalyzed using two new factor-based scores, Dominant/Assertive and Independent, and one new factor-based score, Caring, derived from the Bem Sex Role Inventory (BSRI) masculinity and femininity scores, respectively. The possible differential effects of two types of experimental arousal, one emphasizing intellectual achievement and the other social-achievement, upon the degree of need achievement elicited in white, middle-class women were explored. Women's achievement motivation scores increased significantly under arousal. The interaction between experimental conditions and the Dominant/Assertive factor was not significant and there were no main effects. The experimental conditions x Independent variable interaction was significant but meaningless. There was a significant interaction between the combined Dominant/Assertive and Independent scores and experimental conditions: women whose combined scores fell above 20 had greater need achievement after Social-Achievement arousal. While a significant interaction was found between the Caring variable and experimental conditions, the actual proportion of variance accounted for only one percent. Comparison of these findings with the previous results suggests that sex-role variables play a minor role in the expression of achievement motivation in women.
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ANOTHER LOOK AT SEX-ROLE IDENTITY
AND WOMEN'S ACHIEVEMENT MOTIVATION

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In recent years, the traditional assumption that masculinity and femininity are bipolar and unidimensional has been widely contested (Bem, 1974, 1977; Block, 1973; Constantinople, 1973; Foushee, Helmreich, & Spence, 1979; Heilbrun, 1976; Mednick & Weissman, 1975; Spence & Helmreich, 1978; Spence, Helmreich, & Stapp, 1975). Responding to the need for a new operational definition of masculinity and femininity as two independent traits, the Bem Sex Role Inventory (Bem, 1974) was developed. Subsequent criticism has revealed some methodological difficulties with the Bem Sex Role Inventory (BSRI), however, one of the primary problems being the questionable factor analytic structure of the masculinity and femininity scales.

In an attempt to clarify data obtained from a previous study by the author (Jacobson, 1977) in which raw scores from the BSRI masculinity and femininity scales were used, the present study re-examined the relation between sex-role identity and the experimental arousal of achievement motivation in women utilizing new factor-based scores on the Bem Sex Role Inventory. More specifically, this investigation explored the possible differential effects of two types of experimental arousal, one emphasizing intellectual achievement and the other social achievement, upon the degree of achievement motivation (i.e., need Achievement or *n* Ach) elicited in white, middle-class college women.

One hundred and eighty female undergraduates at Douglass College in New Jersey formed the sample. In the previous study, 60 research participants had been randomly assigned to a Control condition, another 60 to an Intellectual-Achievement condition, and the remaining 60 were assigned to a Social-Achievement arousal condition. After the assignment to experimental conditions, 30 students in each group were randomly assigned to respond to female stimulus cues and the remainder had to respond to male cues. All groups were given a pretest TAT measure of *n* Achievement, with half of each group, therefore, responding to female pictures and half to male pictures. The pretest

was given under neutral conditions as described by McClelland, Atkinson, Clark, & Lowell (1953, pp. 101-102). Immediately after the pretest, subjects were administered the Bem Sex Role Inventory (Bem, 1974) and the Attitudes toward Women Scale (Spence, Helmreich, & Stapp, 1973) in order to assess their sex-role identities and sex-role attitudes, respectively.

A week later, research participants were exposed to the experimental treatments and were then given a posttest TAT n Ach measure. To control for the order of presentation of thematic cues in the male and female picture sets, counterbalancing techniques were employed. Thus, those who had been administered Female Set A for the pretest were shown Female Set B for the posttest; the reverse occurred for those who had received Female Set B first. Similarly, those who had responded to Male Set C for the pretest were given Male Set D for the posttest and those who had been shown Male Set D first were administered Male Set C for the posttest. A schema of the experimental design is outlined below.

EXPERIMENTAL CONDITIONS

		Control	Intellectual- Achievement Arousal	Social- Achievement Arousal		
SEX OF STIMULUS CUES	Female	Set AB ^a	15	15	15	45
		Set BA	15	15	15	45
		Set CD	15	15	15	45
	Male	Set DC	15	15	15	45
			60	60	60	180

^aFirst letter indicates set used as a pretest and second letter indicates posttest measure of n Ach.

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In the Control condition, subjects were given the posttest TAT n Ach measure under neutral conditions and no experimental manipulation was made to arouse achievement motivation. On the other hand, in both the Intellectual- and Social-Achievement arousal conditions need for Achievement was manipulated by means of special instructions and by an appropriate achievement-related task which research participants had to perform prior to being presented with the thematic pictures about which they had to write imaginative stories.

It was expected that individuals would display higher n Achievement under achievement-oriented conditions than under neutral conditions, if the arousal conditions stressed achievement areas consistent with perceptions of their own sex role. Since males have been found to consistently respond to experimental arousal emphasizing intelligence and leadership potential with an increase in their achievement motivation scores, it was hypothesized that the more masculine a woman's sex-role identity, the greater the increase in her n Achievement after being presented with an Intellectual-Achievement arousal condition. Following from Stein & Bailey's (1973) proposition that achievement strivings of women tend to be expressed in role-appropriate areas such as social skills, it was predicted that the more feminine a woman's sex-role identity, the greater the increase in her n Achievement after being exposed to a Social-Achievement arousal condition.

It had further been hypothesized that the less traditional a woman's sex-role attitudes, the greater her need for Achievement after Intellectual-Achievement arousal. The more traditional a woman's sex-role attitudes, the greater the increase expected in her achievement motivation after Social-Achievement arousal.

Multiple regression analyses were performed in which the pretest need Achievement measure was covaried out of the posttest TAT n Ach measure (the

dependent variable) to determine how much of the variance in the posttest was due to the independent variables (experimental treatments, BSRI masculinity, BSRI femininity, AWS, sex of thematic cues) over and above that due to the pretest. It was found that the experimental conditions accounted for 47% of the variance over the 26% accounted for by the pretest. Post hoc comparison of the combined adjusted means of the Intellectual- and Social-Achievement arousal conditions with the adjusted mean of the Control condition revealed a significant overall increment in women's achievement motivation scores after arousal ($F_{2,176} = 6.03$; $F_{2,176;.05} = 3.05$). Although subjects tended to respond with higher need Achievement to male pictures than to female pictures under the Intellectual-Achievement arousal condition, the interaction was not meaningful in that it accounted for just 1% of R^2 .

Regression analyses did not support the hypotheses that those women with more masculine sex-role identities or more nontraditional sex-role attitudes would show greater n Achievement after Intellectual arousal or that those women with more feminine sex-role identities or more traditional sex-role attitudes would show greater n Achievement after Social arousal. Contrary to prediction, there was a significant disordinal interaction between BSRI masculinity and the experimental conditions ($F_{2,173} = 6.22$; $F_{2,173;.05} = 3.05$) such that women with demonstrated high masculinity on the BSRI had significantly higher adjusted posttest scores under Social-Achievement arousal, whereas women with low masculinity had significantly higher n Achievement under Intellectual-Achievement arousal. Results of the Johnson-Neyman technique indicated that women whose scores on the BSRI masculinity scale fell above 106 did higher after Social-Achievement arousal and those whose scores fell below 80 did higher after Intellectual-Achievement arousal. The proportion of variance accounted for by this interaction was minimal, that is, 2%.

While the interaction between BSRI femininity and the experimental con-

ditions was nonsignificant, a test of the main effects yielded a positive relation between the femininity variable and the adjusted n Ach posttest. The higher a woman's femininity score, the higher her n Achievement scores on the posttest regardless of experimental conditions ($F_{1,175} = 4.72$; $F_{1,175;.05} = 3.90$). However, the amount of variance contributed by the relation between BSRI femininity and the n Ach posttest was only 1%.

Sex-role attitudes as measured by the AWS proved to be unrelated to changes in women's achievement motivation after exposure to the experimental treatments ($F_{1,175} = .41$; $F_{1,175;.05} = 3.90$).

Reanalysis of Previous Results

In the present study the hypotheses were re-examined through multiple regression analyses of covariance using two new factor-based scores, Dominant/Assertive and Independent, derived from the BSRI masculinity score, and one new factor-based score, Caring, derived from the BSRI femininity score. The Dominant/Assertive factor is composed of nine BSRI items (M2, M5, M6, M7, M9, M13, M15, M16, M17), the Independent factor three items (M1, M3, M12), and the Caring factor 10 items (F4, F8, F9, F10, F11, F12, F14, F15, F19, F20).

Similar to the method employed in the previous analyses, the n Ach posttest served as the dependent variable and the n Ach pretest was entered in as the first independent variable. The experimental conditions were forced in as the second independent variable, the factor-based score as the third, and the interaction of the factor-based score with the experimental conditions comprised the fourth independent variable.

Contrary to the significant interaction which had been observed between BSRI masculinity and the experimental conditions, a test of the significance of the interaction between the experimental treatments and Dominant/Assertive variable revealed that the interaction did not contribute significantly to the amount of variance accounted for ($F_{2,173} = 3.04$; $F_{2,173;.05} = 3.05$) and

there were no main effects. On the other hand, the experimental conditions x Independent variable interaction was significant ($F_{2,173} = 4.72$; $F_{2,173;.05} = 3.05$). This interaction was not meaningful, however, since it accounted for less than .3% of the variance. Thus, the two new factor-based masculine scores taken separately contributed to even less variance than did the old BSRI masculinity score; the latter accounted for 2% of R^2 .

In an attempt to further explore the meaningfulness of the factor-based masculine scores, the interaction between the combined Dominant/Assertive and Independent scores and the experimental conditions was tested. There was a significant interaction between the combined factor-based masculine variable and the experimental treatments ($F_{4,170} = 4.04$; $F_{4,170;.05} = 2.42$), accounting for 2.29% of R^2 after variance in the posttest had been attributed to the pretest and experimental conditions. The Johnson-Neyman technique was then performed to determine at what points on the combined Dominant/Assertive-Independent scores the experimental conditions had a differential effect on the adjusted posttest scores. Results of this procedure indicated that women whose combined scores fell above 20 had greater n Achievement after Social-Achievement arousal. While these results are in the same direction as the original analysis in which women with high masculinity scores had greater n Achievement after Social-Achievement arousal, the new factor-based scores failed to discriminate those women who had low masculinity.

Unlike the BSRI masculinity scores, the combined Dominant/Assertive and Independent scores displayed an ordinal interaction with the experimental conditions, the rank order of the experimental treatments remaining constant across the range of factor-based scores. Therefore, contrary to the BSRI masculinity x experimental conditions interaction, no differential effects on the adjusted posttest scores were demonstrated by the interaction between the new factor-based masculine scores and experimental treatments.

With regard to the third factor-based score, Caring, the regression analysis resulted in a significant interaction between the experimental conditions and Caring variable ($F_{2,173} = 3.89$; $F_{2,173;.05} = 3.05$). In contrast, no interaction effects were shown in the case of the BSRI femininity scores, only main effects. However, the actual amount of variance associated with the Caring interaction term was 1% and not indicative of a meaningful result. Further analysis by means of the Johnson-Neyman technique yielded no significant differences between the Intellectual- and Social-Achievement groups on the n Ach posttest within the range of research interest for the Caring factor. As with the masculine factors, the new factor-based feminine score was unable to discriminate the differential effects of the experimental conditions on the adjusted posttest scores.

Conclusions

The data from both investigations fail to support the theoretical predictions that women would respond with greater achievement imagery to experimental arousal conditions consistent with their sex-role identities. On the whole, sex-role identity has been found to account for minimal variance in the n Achievement posttest--about 2% or less, regardless of whether the old BSRI masculinity and femininity scores or the new factor-based scores are utilized.

The finding that females with differing degrees of masculinity, as measured by the combined Dominant/Assertive-Independent score, display higher need Achievement after Social-Achievement arousal is partially consistent with the earlier study in which only those women high in masculinity had greater n Achievement after socially-oriented arousal. Previously, females who were low in masculinity had higher n Achievement after Intellectual-Achievement arousal rather than after Social-Achievement arousal as evidenced in the present study. One possible explanation for this discrepancy is that

the new factor-based scores are not reflective of masculinity as such, but of certain agentic characteristics which are positively correlated with social skills. This interpretation would lend support to Stein & Bailey's (1973) position that women's achievement strivings tend to be expressed in areas consistent with the female role in society. Another reason for the observed differences in results may be that the new factor-based items lack discriminatory power and are less sensitive to differences in women's responses to achievement situations than is the BSRI masculinity score, the masculinity score being wider in scope. In fact, the eight BSRI masculinity items excluded from the Dominant/Assertive and Independent scales (i.e., athletic, analytical, willing to take risks, makes decisions easily, masculine, individualistic, competitive, ambitious) tap characteristics related to competition and the achievement-motivated personality and make the BSRI masculinity score more suitable for assessing possible effects of arousal.

While a significant interaction between Caring and the experimental conditions was found and contradicts previous results whereby the BSRI femininity x experimental conditions interaction was nonsignificant, this finding does not provide any further clarification of the issue. Whereas earlier results had shown BSRI femininity to be related to responsiveness to achievement-oriented conditions, it is unclear how Caring interacts with the motive to achieve. In as much as the variance accounted for by either Caring or BSRI femininity was not above 1%, the questions raised have little import.

To conclude, reanalysis of previous findings by substituting new factor-based scores for the BSRI masculinity and femininity scores has not yielded additional insight into women's need for achievement. Nonetheless, considering the results of both studies it seems certain that sex-role variables do not play a major role in the demonstration of women's desires for successful achievement in modern-day society.

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